

CLAIMS

- 1 - Method to secure the execution of at least one module in an electronic unit comprising information processing means and information storage means, characterised in that, during the execution of said module, it consists, during the passage by at least one beacon, in storing one or more items of information concerning one or more characteristics of said beacon and in checking, at at least one check point, the consistency of the information stored about all beacons encountered.
- 2 - Method to secure at least one module designed to be integrated in an electronic unit including information processing means and information storage means, characterised in that it integrates automatically in said module equipped with a set of directives a set of static data, beacon functions and verification functions, the first representing a set of valid executions, the second calculating dynamically a representation of the execution, and the last used to check the consistency of the static and dynamic data.
- 3 - Method according to claim 2, characterised in that it uses the control flow graph of the program to be protected to generate the static information used by the verification functions.
- 4 - Method according to claim 2 or 3, characterised in that a beacon is information which defines the characteristics of the corresponding passage point and/or one or more other passage points.
- 5 - Method according to claim 4, characterised in that a beacon is one of the following elements, a combination of several of them, or all of them:
- an integer locating the beacon in the code to be protected;
 - a Boolean variable defining whether it is the first or the last beacon;

- a data structure characterising, according to the value of a register or a given variable, all beacons through which passage will be forbidden (using a verification function) in the remaining execution;
- a data structure characterising, according to the value of a register or a given variable, all beacons through which passage will be forced (using a verification function) in the remaining execution.

6 - Method according to one of claims 2 to 5, characterised in that a beacon function is one which is called by the program at each passage by a beacon and which will consist in storing dynamically in the shared memory various items of information concerning the beacon.

7 - Method according to claim 6, characterised in that a beacon function is one which pushes the beacon onto the stack in the shared memory and/or one which updates a checksum contained in the shared memory with the beacon data.

8 - Method according to one of claims 2 to 7, characterised in that a history verification function is one called at each check point to check the consistency of the information stored in the shared memory during the successive calls of the beacon functions.

9 - Electronic unit including information processing means and information storage means containing at least one module to be executed characterised in that it includes the means required, during the execution of said module, and during the passage by at least one beacon, to store one or more items of information concerning one or more characteristics of said beacon in said storage means and means to check, at at least one check point, the consistency of the information stored about all beacons encountered.

10 - Program including program code instructions to execute the steps of the

method according to one of claims 1 to 6 when said program is run in an electronic unit.